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SIZING UP THE BURDEN OF UNEMPLOYMENT IN CANADA

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PART III: IMPACT OF UNEMPLOYMENT ON FAMILY INCOME

by

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ABSTRACT

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At times of high and prolonged unemployment, most workers and their families experience an income loss which can be buffered by other means. In contrast, a "significant minority" are far more vulnerable to "low income status". Members of the significant minority tend to have limited human capital and earn relatively low yearly incomes. They are also more likely to be at risk of prolonged joblessness and exhausted unemployment insurance benefits. When such workers are unattached individuals, heads of single-parent families, or heads of families with nobody else employed, their financial vulnerability to unemployment is even greater. This consideration is rarely taken into account in income protection schemes with the result that redistributive effects of, say, unemployment insurance tend to be far less on a family than on an individual basis.

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IMPACT OF UNEMPLOYMENT ON FAMILY INCOME

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Introduction

Abnormally high unemployment is expected to plague Canadians for some time to come as fiscal and monetary policy aims to check inflation, reduce budgetary deficits, and restore the economy to a position of competitive advantage (Economic Council:1984, Kaliski:1984). This prospect is prompting government officials to intensify their efforts to identify workers and their families who are suffering most. From a financial perspective, it raises two pressing questions. To what extent are unemployment (a labour market problem) and financial hardship (an income or welfare problem) directly linked? And, to what extent are inequalities in family incomes likely to increase as a result of prolonged joblessness?

The first question is crucial because policy-makers suspect that unemployment does not lead to financial hardship in the majority of cases. They point to growth of dual-earner families which reduces reliance on primary breadwinners; increasing numbers of wives, dependent children and relatives in the labour force (all of whom have historically high unemployment but tend not to be principal breadwinners); increased generosity of unemployment insurance as a "first line of defence against unemployment" and growth of related transfer and welfare programs as a "second line of defence against unemployment" (Economic Council:1978, E&IC:1981, OECD:1982). If this interpretation does not misrepresent the facts, it implies the need to revise popular misconceptions that more than a million unemployed Canadians are experiencing very difficult financial times. Indeed, it conveys some urgency to identify and assist "minorities" who are relatively worse off.

The second question is important because prolonged recession does not confront all workers with the same risk of long-term unemployment. Those in

occupations requiring higher levels of human capital or on-the-job training (e.g., professionals) experience considerable employment stability. An employer who abandons such employees is likely to find himself/herself in the costly position of having to rehire and retrain others when recession ends. In the terminology of "dual labour market theory", workers in such occupations are called "protected workers" (Wachter:1974, Piore:1983). Conversely, employers are more likely to fire or lay off unskilled workers or those who have not been provided with on-the-job training (an investment by the employer). This implies that poorly educated, low wage earning workers are more likely to experience both longer term unemployment and greater financial hardship. Financial hardship is implied because costs of long-term unemployment subtract from yearly incomes that are already low.

Both questions concern applied income distribution: the size and determinants of the effect of involuntary unemployment on worker earnings and family incomes. Compared with theoretical developments in this area, little has been established empirically. This is especially true in Canada where studies of unemployment are remarkably few. This paper seeks to narrow the gap by consolidating recent evidence and providing direct estimates of the impact of unemployment on income. First, we quantify differences in the effects of unemployment when workers are disaggregated by education, family status, and sex. These variables provide powerful clues about workers and their families most vulnerable to the financial consequences of unemployment. Second, we estimate the impact of a worker's unemployment on his/her family income when the redistributive effects of unemployment insurance (UI) are removed. This part of our analysis is prompted by the question, who is protected most/least in a hypothetical world without UI? Third, we compare the relationship between unemployment and family incomes between 1981 and 1982. During this short period, Canada's national unemployment rate rose by more than 40% and prolonged joblessness produced increasing numbers of unemployment insurance exhaustees.[1]

Our results are consistent with the hypothesis that when unemployment strikes, most workers and their families experience an income loss which can be buffered by other means whereas a "significant minority" are far more

vulnerable to "low income status". Members of the "significant minority" tend to have limited human capital and earn relatively low yearly incomes. They are also far more likely to be at risk of prolonged joblessness, thus resulting in exhausted unemployment insurance benefits. When such workers are unattached individuals, heads of single-parent families, or heads of families with nobody else employed, their financial vulnerability to unemployment is even greater. This consideration is rarely taken into consideration in income protection schemes with the result that redistributive effects of unemployment insurance tend to be far less on a family than on an individual basis.

The balance of this paper is organized as follows. We set the stage for our empirical work by reviewing major findings of recent studies. We then formulate a simple model, generate hypotheses, specify our functional form, and present results. We conclude the paper with a brief discussion of policy implications.

What We Know

Recent studies have significantly altered our understanding of the distributional consequences of unemployment in Canada. They can be grouped into three categories. The first makes exclusive use of Statistics Canada's Labour Force Survey (monthly) to analyze rates of entry and exit into "states" of unemployment, employment and "not in the labour force". Called "gross flows" analysis, they include Kaliski (1979), Glenday and Jenkins (1981), Economic Council (1982), Beach and Kaliski (1983), and Hasan and de Broucker (1982, 1985).

The major theoretical contribution of "gross flows" studies has been to challenge the "dynamic" or "turnover" view of the labour market. According to this interpretation, the turnover rate at which workers erratically flow into unemployment is the principal determinant of the rate of unemployment, whereas the average duration of each unemployment spell is assigned secondary importance. This is tantamount to assuming that unemployment is a problem of numbers of workers who experience joblessness rather than differences in

duration of joblessness. Revisions to the dynamic view were set in motion by Clark and Summers' (1979) seminal study of the U.S. labour market. They show that a minority of unemployed workers experienced extended periods of unemployment lasting more than six months and that these workers accounted for a disproportionately large share of all months of unemployment. An important policy implication is that measures to reduce the impact of unemployment on the distribution of incomes should focus on the hard-core unemployed rather than on high frequency, short-duration cases.

Gross flows studies in Canada confirm findings reported by Clark and Summers. The most comprehensive study by Hasan and de Broucker (1985) shows that the burden of unemployment is not equally shared among unemployed individuals in the workforce. Most unemployment spells are of relatively short duration whereas a "significant minority" are of much longer duration. Hasan and de Broucker emphasize significant minority because 40-50% of all unemployment during 1980 and 1982 can be attributed to a relatively small proportion of unemployment spells lasting more than three months.

The second category of unemployment studies also focuses on labour force entry and exit rates but over a much longer time frame. Studies in this category make use of a longitudinal file developed by Employment and Immigration Canada (E&IC) which monitors unemployment insurance claimants experiencing recurrent unemployment over several years.[2] Studies in this category remain largely unpublished and include Magun (1982, 1983) and Robertson (1982, 1983).

E&IC studies report three principal findings. First, examination of unemployment experience between 1975-79 shows that if a worker was "chronically unemployed" in both 1975 and 1976, meaning that he/she had at least 27 weeks of unemployment in both years, then his/her chances of being unemployed in 1978 were about 50%. This compares with only 15% for those who experienced short-term unemployment in 1975 and 1976. Second, defining the "chronically unemployed" as those who were unemployed more than 30% of the time between 1973 and 1977, Robertson (1983) shows that the Atlantic provinces accounted for 32% of Canada's chronic unemployment over a five year period and Quebec,

45.5%. In contrast, he shows that chronic unemployment in that period was virtually non-existent in the Prairie provinces and British Columbia! Third, as would be expected, the chronically unemployed have lower average levels of education, thus implying lower earnings. These studies further convey that a large share of all unemployment affects a relatively small number of individuals on the lower end of the income distribution.

The third category of unemployment studies stands alone by virtue of access to income data. At present, Statistics Canada's Survey of Consumer Finances is the only data source which allows "up-to-date" analysis of earnings and family incomes of the unemployed. Studies in this category include Chawla (1984) and Shaw (1985b). They establish quite clearly that the relationship between long-term unemployment and financial hardship is not direct. Some intervening factors greatly cushion the impact of long-term unemployment (presence of multiple earners in the household), whereas others greatly aggravate it (presence of dependent children).

The most important theoretical contribution of these studies is that they evaluate long-term unemployment and financial hardship in the context of the family. Membership in a family can have a strong bearing on the relationship between unemployment, financial well-being and the distribution of incomes for at least three reasons. First, families with multiple earners are cushioned against unemployment of one member. Second, family stress theory shows that family units respond to unemployment in terms of "regenerative capacity" (the "added worker effect") as well as in terms of "vulnerability" (Moen:1979, 1983, Voydanoff:1983). Families with several adult members can offset periods of unemployment by a "traditional" earner by sending normally non-earning members into the labour force. Third, changing family composition is altering the relationship between unemployment and low family incomes. The main changes are: smaller families, more single-parent families, more multiple earner families.

Empirical work suggests that "family status" considerations are sufficiently important that failure to take them into account greatly obscures

the relationship between unemployment and "low income status". This point is illustrated in Table 1, column 9. The incidence of "low family incomes" in 1981 (defined as the proportion of workers in families with total incomes below Statistics Canada's "Low Income Cut-Offs") was highest among long-term unemployed workers (those unemployed 27 weeks or more in 1981) who were living alone as unattached individuals or as female family heads, followed by male family heads, followed by family members excluding heads. It was about five times higher among unattached individuals and female family heads than family members excluding heads.

Figures for 1982 in Table 1 also convey that differentials in the incidence of "low family incomes" among long-term unemployed workers are highly similar to those in 1981. Thus, at a time when national unemployment rates rose by more than 40%, the incidence of "low family incomes" among family members excluding heads showed little change. The only subgroup that experienced a drop in average family income (and a sharp increase in the incidence of "low family incomes") is female family heads. (Comparisons between 1981 and 1982 incorporate adjustments for inflation.)

Table 1 allows us to produce some rather startling contrasts. Long-term unemployed workers who were family members excluding heads in 1982 were in families with total incomes of $31,900, on average. These individuals represented 51% of all workers who experienced long-term unemployment (ie., 27 weeks or more unemployment). In contrast, long-term unemployed family heads represented 35% of the long-term unemployed and were in families with incomes of $19,900. For long-term unemployed unattached individuals (14% of the long-term unemployed), the corresponding income figure is only $7,800. (These comparisons have been derived by manipulating and averaging figures in Table 1, columns 1-3 and 4-6.)

Summing up, studies reviewed thus far suggest that unemployment impacts on the distribution of income as follows:

(1) A relatively large share of all unemployment in Canada is accounted for by a "significant minority" of workers who experience long-term unemployment.

Table 1. Selected Income Statistics of Canadian Workers Experiencing Unemployment by Sex, 1981 and 1982

Worker Characteristics	Workers			Average Family Income*			Percent of Workers with Family Incomes Below "Low Income Cut-Offs"**		
	All workers (000's)	Percent of all workers with some unemployment (%)	Percent of all workers with 27 weeks or more unemployment (%)	Workers with no unemployment ($)	Workers with some unemployment ($)	Workers with 27 weeks or more unemployment ($)	Workers with no unemployment (%)	Workers with some unemployment (%)	Workers with 27 weeks or more unemployment (%)
(1981)	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Family Members Excl. Heads									
Male	1,617	29.8	10.1	43,262	35,867	31,427	5.2	9.0	12.8
Female	4,446	18.8	5.8	38,671	31,466	28,865	4.0	8.0	11.0
Family Heads									
Male	5,132	16.2	3.9	35,788	24,045	18,871	5.0	18.0	33.7
Female	418	20.3	7.4	21,684	14,339	12,786	22.7	52.6	64.5
Unattached Individuals									
Male	886	25.7	7.1	20,401	11,833	7,558	13.8	37.9	60.3
Female	784	17.3	4.2	15,674	8,599	7,041	20.6	51.3	61.8
(1982)									
Family Members Excl. Heads									
Male	1,589	37.0	14.3	46,216	40,330	35,173	6.9	8.7	12.6
Female	4,500	21.5	8.3	42,298	33,475	29,876	4.9	9.7	12.8
Family Heads									
Male	5,146	20.2	7.0	39,548	26,297	20,991	5.4	19.6	32.2
Female	442	25.3	10.1	23,935	13,985	11,737	21.1	59.6	73.3
Unattached Individuals									
Male	930	31.0	12.3	22,417	12,040	8,002	15.2	41.3	60.3
Female	781	19.7	6.5	17,604	9,402	7,328	18.8	48.2	61.1

Source: Unpublished tabulation from the Survey of Consumer Finances, Statistics Canada.

Note: * In the case of "unattached individuals", average family income denotes average household income.

** "Low Income Cut-Offs" include adjustments for inflation, thus rendering percentages comparable for 1981 and 1982. The methodology for constructing the "cut-offs" is provided in Statistics Canada (1980).

(2) These workers are more likely to have limited human capital; limited human capital increases vulnerability to low income status at times of unemployment because poorly educated workers earn relatively low wage rates, resulting in relatively low "pre-unemployment" incomes.

(3) As workers described by (2) are also likely to be at greater risk of prolonged joblessness, exhausted unemployment insurance benefits are likely to combine with low pre-unemployment incomes to aggravate financial vulnerability.

(4) Family status considerations greatly modify financial consequences of long-term unemployment among poorly educated, low wage earning workers; some subgroups of workers described by (1) through (3) are likely to experience severe setbacks whereas a large share are likely to be in a relatively good financial position to "weather the storm".[3]

Analytic Framework

To formalize hypotheses, consider a worker in a family with income from other sources, V; whose wage rate is w; who receives UI benefits, b, per hour of unemployment; and who would like to work T hours in a year but suffers U hours of involuntary unemployment. His/her family income, FY, is determined as follows:

$$(1)\quad FY = V + w(T-U) + bU$$

Assuming V and T are fixed, the impact of U on FY is given by:

$$(2)\quad \frac{\partial FY}{\partial U} = b - w$$

The elasticity of FY with respect to U, which is the main item of interest in this study, is given by:

$$(3)\quad N = \frac{U}{FY}\,\frac{\partial FY}{\partial U} = \frac{U\,(b - w)}{V + w\,(T - U) + bU}$$

From (3), the following hypotheses emerge;

Hypothesis 1: N increases in absolute value with U.

1a: An X% increase in U will have a larger proportional impact on FY among less educated workers. (Less education is positively correlated with U and negatively correlated with earnings.)

Hypothesis 2: N declines in absolute value with V.

2a: An X% increase in U will have a smaller proportional impact on FY among workers in families containing multiple earners. (Presence of multiple earners is positively correlated with V.)

Hypothesis 3: N declines in absolute value with b.

3a: An X% increase in U will have a smaller proportional impact on FY among workers with more regular attachment to the labour force. (Entitlement to b, amount and duration of b are positively correlated with regular versus part-time or temporary attachment to the labour force.)

Hypotheses 2a and 3a acknowledge that workers in some family groups have higher V and lower T than others (thus relaxing the assumption of fixed V and T). Continuing to classify workers according to the family categories in Table 1, we know that the prelevance of multiple earners, and thus higher V, is greatest among those who are family members excluding heads (a_1), followed by family heads (a_2), and unattached individuals (a_3). Workers in a_1 are almost always in families containing two or more earners; those in a_2 are frequently in families with two or more earners; by definition those in a_3 are in one earner family/households. Thus, we expect;

$$\partial FY_{a_1}/\partial U_{a_1} < \partial FY_{a_2}/\partial U_{a_2} < \partial FY_{a_3}/\partial U_{a_3}$$

We also know that family members excluding heads tend, on average, to be more marginally attached to the labour force as part-time or temporary workers. Moreover, at times of high unemployment, wives and adult children in this group are more likely to enter the labour force just long enough to quality for UI benefits (eg., in response to federal job creation programs). In their case then, T tends to be lower, leading us to expect;

$$\frac{\partial (FY-bU)_{a_1}}{\partial U_{a_1}} < \left[\frac{\partial (FY-bU)_{a_2}}{\partial U_{a_2}}, \frac{\partial (FY-bU)_{a_3}}{\partial U_{a_3}}\right].$$

The hypotheses above are relatively straight forward. Our principal interest in this paper is to quantify differences between groups of workers, discern patterns in these differences, and make judgements about how these comply with equity goals of unemployment policy.

Empirical Model and Data

Our empirical model relates changes in FY to worker and family characteristics as follows;

$$(4)\quad FY_{a_{it}} = f(U,W)_{a_{it}} + h(X')_{a_{it}} + Z(Q)_{a_{it}},\ f_1 > 0,\ f_2 > 0$$

where; FY = total family income adjusted for inflation
U = length of unemployment (actual weeks)
W = wage rate (yearly earnings - weeks worked)
X' = vector of additional worker-related variables
Q = vector of family-related variables
a = workers disagregated by family membership; a_1, a_2, a_3 defined as above,
i = worker i ... n
t = time frame

We know that a worker's wage rate (W), and thus his/her pre-unemployment income, is largely a function of human capital (HC) and sex "discrimination"(S). All else constant, sex discrimination appears to account for up to 50% of observed wage differentials in the Canadian labour market (Robb:1971, Gunderson:1979, Shapiro and Stelcner:1981). Thus,

$$(5)\quad W_{a_{it}} = g(HC, S)_{a_{it}},\ g_1 > 0,\ |g_2(M)| > |g_2(F)|,$$

where; S = male (M) or female (F). Substituting (5) into (4) we obtain;

$$(6)\quad FY_{a_{it}} = f(U)_{a_{it}} + g(HC,S)_{a_{it}} + h(X')_{a_{it}} + Z(Q)_{a_{it}}.$$

Acknowledging that workers who experience long-term unemployment are likely to have limited human capital, it is clear that $f_1(U)$ and $g_1(HC)$ in equation (6) will be highly interdependent. In contrast, it is reasonable to assume that human capital and sex, or unemployment and sex will be relatively independent. To eliminate this problem, we further disaggregate our workers into mutually exclusive subgroups. This involves transferring human capital (HC) and sex (S) considerations to the left side of equation (3) to produce;

$$(7)\quad FY_{abc_{it}} = f(U)_{abc_{it}} + h(X')_{abc_{it}} + z(Q)_{abc_{it}},$$

where; HC = b_k ... 5 educational groups; 1 = university degree or more, 2 = diploma or post-secondary school certificate, 3 = grades 12 or 13, 4 = grades 10 or 11, 5 = less than grade 10; and where S = c_1 ... 2; 1 = males, 2 = females. Thus, we intend to estimate the impact of worker i's unemployment (U) on his/her family income (FY) for 3x5x2 = 30 worker subgroups.

Control variables (X') in equation (7) include worker's age, part-time versus full-time work status, and job tenure (to proxy experience and regular attachment to the labour force); English versus French language (to proxy discrimination or ethnic differentials in earnings); recent immigration during 't-5' years (to proxy possible language/skill/cultural difficulties in adapting to a new work environment), and occupation. Our control for occupation agrees with the hedonic wage function in which differentials in worker earnings are attributed to variations in job attributes as well as worker attributes (human capital) (Brown:1980, Kumar and Coates:1982). Control variables (Q) in equation (7) pertain more generally to FY and include province of residence (to control for regional economies), and presence of more than one income earner in the family. Underpinnings for most of these variables accord with past studies on determinants of earnings per se. Detailed definitions of each variable are provided in Appendix A.

Our data derive from the 1982 and 1983 Survey of Consumer Finances (SCF) which enumerated information on unemployment and income for the years 1981 and 1982, respectively. Samples for these years contain detailed information on approximately 55,590 and 55,617 workers, respectively.[4] A worker is defined as a person who reported earnings, weeks worked or weeks unemployed during the year of the survey.

To estimate the impact of a worker's unemployment on his/her family income we employ linear least squares regression. Our dependent variable (FY) measures total family income from all sources. FY is not log transformed because our model does not represent a test of human capital theory per se. Nor does it incorporate assumptions of diminishing monetary returns to education.

Following equation (7), we first disaggregate our sample for 1981 and 1982 into subgroups to isolate effects of family status, education and sex. Second, we regress FY_{abc} on unemployment $(U)_{abc}$ and control variables $(X')_{abc}$ and $(Q)_{abc}$. Third, we redefine our dependent variable (FY_{abc}) to evaluate the impact of a worker's unemployment on family income when his/her unemployment insurance benefits are removed. Fourth, for each subgroup we use the estimated regression coefficient for $\overline{U}_{abc}$ (at mean value) to calculate the effect of a change in a worker's unemployment on $\overline{FY}_{abc}$ (at mean value). This procedure is repeated when unemployment insurance benefits are excluded from family income.

The usual approach in econometric work is to ask what is the change in a dependent variable $(\overline{FY}_{abc})$ when an independent variable $(\overline{U}_{abc})$ changes by 10%. However, when average unemployment for some groups of workers is 10-15 weeks, a 10% shock is intuitively meaningless. Accordingly, we ask how family incomes respond, on average, when unemployment of a family member increases by one-half. For family members in some groups this implies an increase in average unemployment in 1982 from 30 to 45 weeks - a level that corresponds to our definition of long-term unemployment.

Results

The impact of unemployment on family incomes (FY) is quantified in Table 2. These results pertain to workers who experienced unemployment in 1981 or 1982. We begin by examining workers disaggregated by family status and education. Sex considerations will be taken up shortly.

Table 2: Impact of a Worker's Unemployment on His/Her Family Income, 1981 and 1982

	Percentage Decline in Average Family Income with 50% Increase in Unemployment							
	1981				1982**			
	All Workers	Family Members Excl. Heads	Family Heads	Unattached Individuals	All Workers	Family Members Excl. Heads	Family Heads	Unattached Individuals
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
A. All Workers Experiencing Unemployment	4.4	3.6	9.7	14.3	6.4	5.2	11.5	20.2
B. By Education:								
Grade 10	5.9	NS	11.6	16.4	9.2	7.8	11.4	33.5
Grades 10-11	5.0	3.6	11.4	15.5	6.9	5.0	12.6	23.9
Grades 12-13	3.9	3.6	9.1	16.6	4.9	5.0	11.9	18.5
Diploma*	2.5	2.5	5.9	10.1	4.9	4.8	7.5	16.5
Univ. Degree	6.4	NS	NS	11.7	4.9	NS	NS	13.1
	With Unemployment Insurance Removed							
C. All Workers Experiencing Unemployment	6.3	4.7	13.6	21.0	9.3	6.9	17.5	30.4
D. By Education:								
Grade 10	8.7	3.5	16.4	25.1	13.5	10.1	17.7	48.6
Grades 10-11	6.7	4.6	15.5	23.0	9.9	6.6	14.7	38.3
Grades 12-13	5.1	4.5	12.0	22.0	7.3	6.8	16.6	27.9
Diploma*	4.4	3.7	9.5	17.5	7.4	6.3	12.7	24.3
Univ. Degree	8.3	NS	6.9	16.8	7.6	NS	9.2	20.1

Notes: NS: Signifies that unemployment is not a statistically significant determinant of variations in total family income (at the .01 level of significance).

* "Diploma" includes workers with a post-secondary school certificate.

** 1982 family incomes have been deflated by the Consumer Price Index which increased 10.8% between 1981 and 1982.

Results for 1981 confirm two broad expectations. First, a 50% increase in unemployment has a far smaller impact on FY among family members excluding heads than it does among family heads or unattached individuals. A comparison of all workers across family groups reveals that this impact ranges from -3.6% for family members excluding heads to -9.7% for family heads, to -14.3% for unattached individuals (Table 2, row A). Differences in this case are almost fourfold. Second, a 50% increase in unemployment has far more of an impact on family incomes of relatively poorly educated workers than does a 50% increase on family incomes of relatively well educated workers. This impact ranges from -5.9% all among workers with less than grade 10 education to -2.5% for those with a diploma (Table 2, column 1). Differences in this case are almost twofold.

Note, however, that our estimate for all workers possessing a university degree does not accord with expectation. We attribute this peculiar finding to data problems. This estimate derives largely from observations on unemployment and family income for which the regression coefficient is not statistically significant. These pertain to family heads and family members and are flagged 'NS' = not significant, in Table 2, columns 2 and 3. Compared with other education groups, this finding is also based on a relatively small sample size, and exhibits a regression coefficient which is barely significant at the .01 level. Furthermore, this particular finding is out of keeping with results for 1982 which do accord with expectation (Table 2, column 5).

Patterns observed above remain largely consistent when the unemployed are disaggregated into fifteen family status and educational subgroups (Table 2, row B, cols. 2-4). Family status interacts with education to produce a good deal of variance in the relationship between unemployment and education. A similar pattern is evident for 1982 (Table 1, row B, cols. 6-8). Summing up, results thus far provide general confirmation of Hypotheses 1, 1a, 2, and 2a.

To what extent did the relationship between unemployment and family income change between 1981 and 1982 when Canada's national rate of unemploy-

ment increased by more than 40%?[5] Turning again to Table 2, we observe that a 50% increase in unemployment among all workers in 1982 would produce a drop in their respective family incomes of 6.4% (Table 1, row A, col. 5). This compares with a drop of 4.4% in 1981. Thus, growth in national unemployment of more than 40%, affected the average, aggregate relationship between unemployment and family income very little. The same impression does not emerge, however, when we examine individuals in the context of different family groups. Incomes of unattached individuals were particularly hard hit compared with those of, say, family heads. At a high level of aggregation then, the 1981/82 recession tells us little about the impact of unemployment on family incomes whereas the distribution of workers by family status and education tells us a great deal.

What is the effect of a worker's unemployment on his/her family income in a hypothetical world without UI? Figures in Table 2 reveal that UI adds comparatively little to the financial well-being of several groups of workers such as relatively well educated family members excluding heads. In contrast, it adds a great deal to others such as relatively poorly educated unattached individuals and family heads. This confirms Hypotheses 3 and 3a. Since approximately 50% of Canada's long-term unemployed are family members excluding heads - the majority of which reside in multiple earner families - it seems imminent that the present UI system which ignores this consideration will be greatly diluted in its effort to protect the working poor. We will elaborate on this issue shortly.

Thus far, we have said nothing about differences between the sexes. To do so, it is necessary to disaggregate the fifteen family status and education groups examined thus far by sex. However, a problem arises because the resulting observations per cell (subgroup) are frequently insufficient to estimate the full model. This applies particularly to female workers. Thus, we have derived estimates specific to sex using an alternate approach. In Table 3, estimates for male and female workers are presented for workers regardless of unemployment experience. Expanding our sample in this way has two effects. On the one hand, it deflates the quantitative impact of a worker's unemployment on his/her family income because (i) average durations

Table 3: Impact of a Worker's Unemployment on His/Her Family Income, All Male and Female Workers, 1981 and 1982

Percentage Decline in Family Income with 50% Increase in Unemployment

	1981				1982			
	All Workers	Family Members Excl. Heads	Family Heads	Unattached Individuals	All Workers	Family Members Excl. Heads	Family Heads	Unattached Individuals
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
A. All Male Workers	1.9	1.6	1.9	3.3	2.1	2.3	2.0	4.8
Education:								
Grade 10	3.2	2.5	3.3	5.7	3.2	4.5	3.1	6.0
Grades 10-11	2.3	1.9	2.5	4.7	2.7	1.9	2.9	7.4
Grades 12-13	1.5	1.5	1.5	3.7	2.2	2.9	2.0	5.7
Diploma*	1.1	.8	.9	2.4	1.6	1.4	1.4	4.9
Univ. Degree	.3	1.2	.3	.9	.9	NS	.2	2.0
B. All Female Workers	.9	1.0	1.6	2.2	1.1	1.2	1.9	2.5
Education:								
Grade 10	.7	.8	NS	1.7	2.0	1.9	NS	5.3
Grades 10-11	1.1	1.0	1.8	3.5	1.4	1.3	2.8	3.1
Grades 12-13	.8	.9	1.6	2.8	.8	1.0	1.4	3.0
Diploma*	.9	1.0	1.5	1.2	.9	1.1	2.2	1.3
Univ. Degree	.9	.8	NS	2.6	.9	.9	NS	.8
	With Unemployment Insurance Removed							
C. All Male Workers	2.4	2.0	2.4	4.3	3.0	3.1	2.9	6.5
Education:								
Grade 10	4.2	3.3	4.3	7.9	4.9	5.9	4.6	9.1
Grades 10-11	2.9	2.3	3.1	6.2	3.9	2.7	4.1	9.6
Grades 12-13	1.9	1.8	1.8	4.5	3.0	3.7	2.7	7.8
Diploma*	1.5	1.2	1.2	3.3	2.2	2.0	2.1	6.1
Univ. Degree	.4	NS	.4	1.2	1.1	NS	.5	2.4
D. All Female Workers	1.2	1.2	2.2	2.9	1.6	1.7	2.8	3.5
Education:								
Grade 10	1.3	1.3	NS	2.8	2.8	2.7	3.0	6.4
Grades 10-11	1.4	1.3	3.0	4.9	2.0	1.9	4.3	5.2
Grades 12-13	1.1	1.1	2.1	3.4	1.2	1.4	2.1	4.1
Diploma*	1.1	1.2	1.9	1.9	1.2	1.4	2.8	2.1
Univ. Degree	1.1	.9	NS	2.9	1.1	1.1	NS	1.1

Notes: NS: Signifies that unemployment is not a statistically significant determinant of variations in total family income (at the .01 level of significance).

* "Diploma" includes workers with a post-secondary school certificate.

** 1982 family incomes have been deflated by the Consumer Price Index which increased 10.8% between 1981 and 1982.

of unemployment are reduced by the presence of fully employed workers, and (ii) resulting family incomes are, on average, higher. This is not problematic given our interest in patterns rather than absolute magnitudes. On the other hand, it introduces estimation errors by an unknown magnitude. The problem here is that some categories of workers are much more homogeneous with respect to unemployment experience than are others.[6] This may distort coefficients across subgroups.

Notwithstanding the caveats above, results for males in Table 3, rows A and B follow the expected pattern. This applies for both 1981 and 1982. For females, however, patterns are less distinct. For example, in 1981, differences across family status groups are smaller than for males. Furthermore, differences across educational groups do not follow a consistent pattern. The expected patterns are more discernible in 1982, but again they are far less so than for males.

To account for differences between males and females, we must look beyond our model to two additional considerations. First, data not presented here reveal that rates of unemployment among male family members excluding heads and male unattached individuals are considerably higher than among their female counterparts. This applies particularly to less educated workers. This means that a 50% increase in unemployment - at the national level - would be distributed in such a way that unemployment duration and thus family incomes of males would be affected more than that of females. To an extent, this pattern is peculiar to Canada's recessionary period of 1981/83 when unemployment struck males harder than females - thus reversing a trend in which females were usually more disadvantaged. This explanation, which focuses on the unemployment side of $\partial FY/\partial U$, partially accounts for the far smaller declines in family incomes among females than males.

A second consideration applies to female family heads. Unlike male family heads, the majority of female family heads in Canada represent lone parent families with dependent children. Although these women tend to have higher rates of unemployment than their male counterparts, this is offset to a large extent by relatively large family allowance and welfare payments (rela-

tive to earnings that is). This explanation, which focuses on the family income side of $\partial FY/\partial U$, helps explain why relatively high unemployment among relatively poorly educated female family heads has such a small impact on family incomes.

Conclusions and Implications

Our findings suggest that most Canadians who experience unemployment can be effectively polarized on a continuum of financial vulnerability. At one end, we visualize a large share of Canadian workers who experience short-duration unemployment. Most are relatively well educated, and earn relatively high "pre-unemployment incomes" as a result. When unemployment strikes it is likely to be a temporary inconvenience with earnings being effectively augmented by unemployment insurance. At the other extreme lies a "significant minority" who experience repeated bouts of long-duration unemployment. Workers in this group are far more likely to have limited human capital and low "pre-unemployment incomes". They are also at greater risk of prolonged joblessness, resulting in exhausted unemployment insurance benefits. When such workers are unattached individuals, heads of single parent families, or heads of families with nobody else employed, their financial vulnerability to unemployment tends to be all the more severe.[7]

Severe unemployment and equity problems require severe measures to overcome them. Yet, the process of tackling severe problem cases necessitates detailed knowledge about who and where they are. One difficulty with the "significant minority" is that its members tend to be relatively disorganized, if not dispersed. Individuals in this group may also be poorly informed about policy measures designed to help them. Effective targeting of scarce resources to assist those most financially vulnerable to unemployment is thus a crucial issue. In Canada, it involves two important questions. Are current job creation and training programs benefiting the most needy? And, is it reasonable - from an equity viewpoint - to continue to administer a universal unemployment insurance system (UI) which ignores differential family incomes and reduced reliance on primary breadwinners in multiple earner households?

The answer to the first question is, unfortunately, that we do not really know. To illustrate, consider Canada's largest job creation program - the Canada Works Program. Canada Works had a funding allocation of approximately $685.3 million for fiscal 1984/85 representing approximately 67% of all funding for current job creation and training programs. Estimated participants in the program number about 200,500.[8] Lamented by officials of Employment and Immigration is the strong possibility that Canada Works may be overrepresenting women and young people who were previously from "outside the labour force" (eg., family members excluding heads). Such individuals, it is thought, are attracted to job creation programs to obtain 8-10 weeks of employment which, subsequently, allows them to draw UI benefits. If these projects underrepresent primary breadwinners who are actually unemployed, their equity effects on unemployment will be diluted. It is also the case that success of the programs is being judged not in terms of effects on financial well-being of participants per se but on performance of the project per se (ie., number of jobs created, successful completion, etc.). The problem here is that little is known about the unemployment, let alone financial, experience of the participants themselves. This seems true of similar programs in countries of Western Europe and the U.S. (Haveman and Saks:1985).

To more effectively protect incomes at times of abnormally high unemployment, Canada Works projects and their intended target groups need to be monitored continuously. The same applies to related programs including Career Access ($178 million funding, 1984/85), Local Employment Assistance and Development ($91 million), Job Corps ($36.8 million) and Summer Works ($28.5 million). The essential input to this task is improved financial information on participants. With such data in hand, officials of Employment and Immigration Canada would be better equipped to compare the income characteristics of participants with the income characteristics of long-term and chronically unemployed workers. Only then might eclectic targeting of today be replaced by more meaningful assessment of program successes and more informed, comprehensive targeting in the future.

Our second question, concerning redistributive effects of UI and "means testing" is as old as Canada's UI system itself. Previous to 1970, questions concerning means testing were treated as largely inappropriate since Canada's UI system was modelled on private insurance principles. If a worker paid into the UI fund, he/she was entitled to collect regardless of financial need. Since 1970, however, Canada's UI system has taken on an important equity objective by extending UI benefits to regions with relatively high unemployment. A major aim of this policy is to reduce inequalities in the distribution of hardship resulting from different levels of unemployment across the country. In addition, UI funds have been put to "developmental use" to upgrade skills in lagging regions. Again, Canada is not alone in this respect. As long-duration unemployment replaces transitory unemployment throughout Western Europe, the rationale for giving monetary UI has been increasingly questioned. Several countries have therefore begun to permit the diversion of UI funds into training programs, mobility allowances, and employment subsidies. The cost of such programs in Canada has grown enormously, reaching approximately $2,900 million, or almost 30% of the total UI bill in 1984. The accompanying deficit in the UI account reached $3,854 million.

Hawkins (1984) reviews these program extensions to show that they have enjoyed an element of success in reducing hardship from unemployment (particularly between regions) and that their "redistributive effects" have coincided with government equalization policy.[9] However, she also summarizes results of an Employment and Immigration Canada study to support arguments that the present structure of UI falls short of its "promise of equity". These arguments are based on the fact that benefits have been evaluated in terms of individual income, not in terms of family units. She concludes that these realities have prompted suggestions that UI benefits be based more on family than individual incomes. This conclusion marries well with findings and ideas advanced in this study.[10]

On other fronts, the government has sought to reinforce its UI equity objectives by taxing back benefits from high income earners (as of 1979). There is also debate in the present government over the idea of increasing the tax on UI benefits among selected high income groups. Both measures would

tend to produce fiscal savings on UI. Also, by progressively taxing incomes among relatively well-to-do individuals and families, they would tend to reduce the upper limit of the income distribution (albeit marginally). The important question, however, is whether such measures would also effectively raise the lower limit of the income distribution. The challenge should not only be to produce fiscal savings but to actively channel a portion of them to benefit the most needy. If fiscal savings are merely used to shore up Canada's diminishing UI fund, or to produce extended UI benefits, chances are that the "significant minority" examined in this paper will benefit only marginally. Recall that to qualify for UI benefits (including extended benefits), workers must accumulate so many weeks of employment. For the "significant minority", however, chronic unemployment seems to be the rule. Their particular problems will undoubtedly require special programs with specially earmarked funds.

Appendix A: Definitions of Control Variables

Variable		
age	-	actual number of years
work status	-	a categorial variable; part-time = 1, 0 = otherwise; full-time = reference group
job tenure	-	a categorial variable; less than 12 months = 1, 0 = otherwise; one to five years = 1, 0 = otherwise; more than five years = reference group

language	-	a categorial variable;
		english = 1, 0 = otherwise;
		french = 1, 0 = otherwise;
		other language = reference group

immigration	-	a categorial variable; between 1976-81 = 1, 0 = otherwise; before 1976 = reference group

occupation	-	a categorial variable;
		clerical = 1, 0 = otherwise;
		sales = 1, 0 = otherwise;
		services = 1, 0 = otherwise;
		primary = 1, 0 = otherwise;
		manufacturing = 1, 0 = otherwise;
		construction = 1, 0 = otherwise;
		transportation = 1, 0 = otherwise;
		professional and administrative = reference group

region of residence	-	Ontario = 1, 0 = otherwise; Quebec = 1, 0 = otherwise; Prairies = 1, 0 = otherwise; B.C. = 1, 0 = otherwise; Atlantic provinces = reference group
presence of multiple earners	-	more than one earner = 1, 0 = otherwise; one earner only = reference group

Footnotes

1. Studies by Employment and Immigration Canada (E&IC:1982, 1984) show that the proportion of claimants exhausting their benefits increased from a "normal" level of about 25% before the 1981/82 recession to about 28% in 1982 and 35% in 1983/84. In fiscal 1983/84, there were approximately 61,200 UI exhaustees per month compared with 36,200 per month in 1980/81. Again, those with relatively low educational levels and earnings (and thus total family incomes) tend to be most vulnerable. High wage earners, by comparison, are not only less prevalent among unemployment insurance exhaustees but, in the event of long-term unemployment and terminated benefits, they are likely to have greater access to savings and capital investments to help buffer financial crises.

2. A limitation of the E&IC longitudinal file, however, is that it includes information on unemployment insurance claimants only.

3. This generalization agrees with recent studies of the U.S. labour market. See, Angel and Tienda (1982), Moen (1983), Glenn and Taylor (1984), U.S. (1984).

4. Our multivariate analysis makes use of unweigthed SCF data. Thus, unlike Table 1, estimates in the balance of this paper are not entirely representative of the total Canadian labour force. In multivariate analysis use of weighted sample data introduces biases of an unknown magnitude. Given the large sample involved, our use of unweighted data should detract only marginally from the representativeness of our findings.

5. This question does not have an obvious answer. On the one hand, we know that (i) many more workers experienced <u>some</u> unemployment in 1982 than in 1981, (ii) the average number of weeks of unemployment among workers increased from approximately 21.6 weeks in 1981 to 24.3 weeks in 1982, (iii) prolonged recession contributed to growing numbers of unemployment insurance exhaustees (see footnote 1), and (iv) total family incomes -

adjusted for inflation - fell slightly over the 1981-82 period. These considerations should reinforce the direct (negative) relationship between unemployment and family incomes. On the other hand, the 1981/82 recession also produced a relatively large share of first-time unemployed workers, most of whom would be fully covered by unemployment insurance. This consideration would tend to dampen the direct (negative) relationship between unemployment and family income by stabilizing the FY component of $\partial FY/\partial U$.

6. To illustrate, consider the effect of unemployment on income as we move up the "educational ladder". Beginning with workers with less than grade eight education, suppose that one-half experience some unemployment and their average duration of unemployment is 35 weeks. Pooling <u>all</u> workers with less than grade eight education would reduce the average duration of unemployment to 17.5 weeks. In contrast, among workers with a university degree, suppose that one-tenth experience some unemployment and the average duration is also 35 weeks. Pooling <u>all</u> workers with a university degree would reduce the average duration of unemployment to 3.5 weeks. Clearly, effects of unemployment on income in the two educational groups is greatly affected by the incidence of unemployment in each group. In particular, effects of unemployment among workers with a university degree would be substantially biased downwards.

7. A recent survey of the U.S. labour market reveals much the same thing (U.S.:1984).

8. These figures are based on estimates as of December 1, 1984.

9. We emphasize an "element" of success because effects of UI on participation in the labour force and labour mobility are contentious issues in Canada. See Shaw (1985c).

10. See also Cloutier (1978) and Osberg (1979). However, a reader has advised a note of caution concerning explicit recommendations that UI be tied to family, as opposed to individual income. Within a broader social

policy context one would want to at least underline that such a policy might foster strong incentives which may be undesirable: to encourage unemployed youth to leave the family home; and to discourage formal marriage among people who are at relatively higher risk of being unemployed. More generally, such a policy would explicitly require a definition of what should be recognized as a "family". Are two people living together in a stable relationship (with or without children), not to be considered as a family unless they marry?

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